



Microflex® MX391BP Series Boundary Microphones User Guide



GENERAL

Shure Microflex® MX391BP series microphones are small, surface mounted electret condenser microphones designed for mounting on conference tables, stage floors, and lecterns. Their high sensitivity and wide frequency response make them especially suitable for picking up speech and vocals in sound reinforcement and recording applications. The supplied MX1BP battery-powered preamplifier allows use of these microphones in situations where phantom power is not available.

FEATURES

- Flat frequency response across the vocal range for uncolored sound
- Interchangeable cardioid, supercardioid, and omnidirectional cartridges that provide optimal choice for any application
- Sleek, low-profile design for unobtrusive appearance
- Balanced transformer output provides for increased immunity to noise over long cable runs.
- MX1BP preamplifier features mic on/mute switch and power LED indicator; works on either a 9 V battery or phantom power.

MODEL VARIATIONS

MX391BP models have a microphone attached to a 43.7 meter (12 ft) cable terminated with a female 4-pin mini connector. The MX1BP preamplifier has an attached 3.7 m (12 ft) cable terminated with a 3-pin male XLR connector.

Microflex® boundary microphones come with one of three interchangeable cartridges, as indicated by the model number (found on the bottom of the microphone base).

MX391/C or MX391W/C or MX391BLP/C. Cardioid pickup pattern for general sound reinforcement applications. Pickup angle (-3 dB) = 130°.

MX391/S or MX391W/S or MX391BLP/S. Supercardioid pickup pattern for sound reinforcement applications requiring narrow or more distant coverage. Pickup angle (-3 dB) = 115°.

MX391/O or MX391W/O or MX391BLP/O. Omnidirectional pickup pattern for recording or remote monitoring applications. Pickup angle = 360°.

PERMANENT INSTALLATION

Screw holes in the microphone base and a bottom exit hole for the microphone cable are provided for permanent installation of the boundary microphone. To re-route the microphone cable through the bottom exit hole, use the following steps:

To re-route the microphone cable through the bottom exit hole, use the following steps:

1. Remove the grille from the microphone base by loosening the single screw on top of the grille.
2. Remove the 4-pin mini connector from the end of the cable by cutting the cable just below the connector.

WARNING: Do not attempt to detach the cable from the microphone interface.

3. Re-route cable as shown in Figure 1.
4. After threading the cable through the bottom exit hole in the mounting surface, re-attach the 4-pin mini connector (see Figure 4).

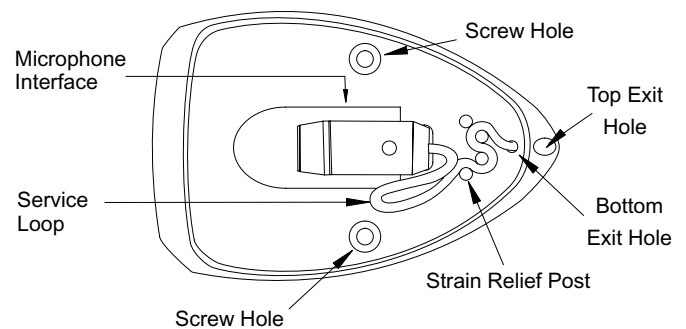


FIGURE 1

REPAINTING THE MX391BP

Before applying paint to the MX391BP series, remove the grille from the base, remove the foam from the inside of the grille, and mask the microphone cartridge and interface. Also, mask the cable where necessary.

BATTERY INSTALLATION (Figure 2)

1. Move the Mic Mute/On switch on the preamplifier to the Mute position.
2. Press down on the OPEN side of the battery compartment cover. Slide the cover back and flip it open.
3. Insert a 9 V battery as shown, observing proper battery polarity ("+/"). Close the battery compartment cover.
4. Move the Mic Mute/On switch on the preamplifier to the On position when ready to use the system.

NOTE: A minimal power drain occurs while the 9 V battery is installed. To conserve battery life, remove the battery when the preamplifier is not in use.

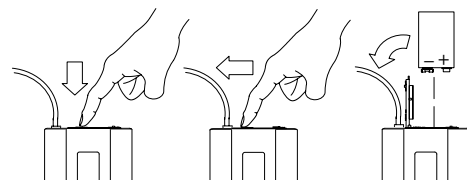


FIGURE 2



OPERATION OF MX1BP PREAMPLIFIER (Figure 3)

1. With the Mic Mute/On switch in the Mute position, plug the microphone into the preamplifier's 4-pin mini connector. (NOTE: Power LED Indicator will remain lit in both the On and Mute microphone modes.)
2. Plug XLR cable from the preamplifier into the respective audio device microphone input.
3. Switch the Mic Mute/On switch to the On position.
4. Adjust the gain level of the audio input device, if necessary.

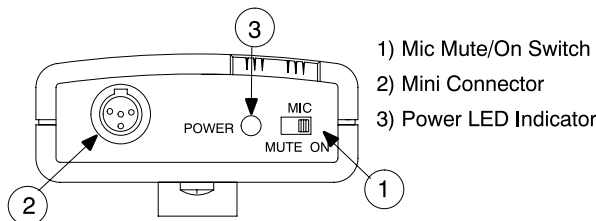


FIGURE 3

INTERNAL LOW-CUT FILTER

The MX1BP has an internal low-cut filter. As shipped from the factory, it attenuates 6dB per octave below 25 Hz. To change the filter to attenuate 12dB per octave below 95 Hz, follow the instructions below:

1. Remove the three screws from the underside of the MX1BP.
2. Remove the plastic cover and lift the printed circuit board with the attached faceplate up and out of the pack.
3. Turn over the printed circuit board and locate the jumper straddling the first and second pins nearest the input jack. Reposition the jumper to straddle the second and third pins.
4. Re-assemble the MX1BP by re-seating the printed circuit board and faceplate. Replace the plastic cover and the three screws.

For additional technical assistance, phone Shure at 1-847-600-8440. In Europe, phone 49-7131-72140.

USE WITH PHANTOM POWER

The MX1BP can also be used in situations where phantom power is available.

Phantom power may be applied with the 9 V battery in place or removed. With the battery installed, the MX1BP will silently and automatically switch to the battery reserve should phantom power fail. Battery depletion will not occur while phantom power is applied.

SPECIFICATIONS

These specifications apply only to the MX391 microphone when used with the supplied MX1BP preamplifier. All measurements taken with the microphone mounted on a wooden surface 762 mm x 762 mm (30 in. x 30 in.).

Wiring Diagram

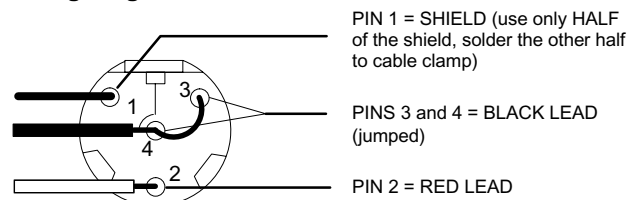


FIGURE 4

Polar Pattern (Figure 8 on page 12)

MX391BP/C: Cardioid (MX391BP/C)
MX391BP/S: Supercardioid (MX391BP/S)
MX391BP/O: Omnidirectional (MX391BP/O)

Polarity

Positive pressure on the diaphragm produces positive voltage on pin 2 relative to pin 3 of the output XLR connector.

Environmental Requirements

Operating Temperature Range: -18° C to 57° C (0° F to 135° F)
Relative Humidity Storage Temperature Range: -29° C to 73° C (-20° F to 165° F) 0 to 95%

Dimensions

See Figure 5 on page 11

Frequency Response (Figure 7 on page 13)

50 to 17,000 Hz

Polar Pattern (Figure 8 on page 13)

Cardioid (MX391/C)
Supercardioid (MX391/S)
Omnidirectional (MX391/O)

Output Impedance (at 1000 Hz)

EIA Rated at 150Ω (115Ω actual)
EIA Rated at 150Ω (180Ω actual)

Open Circuit Sensitivity

Cartridge Type	1 kHz ref. 1 V per microbar *	1 kHz ref. 1 V per Pascal **
Cardioid	-66.547.5 dB (.4734.22 mV)	-46.527.5 dB (4.732.2 mV)
Supercardioid	-65.546.5 dB (.5314.73 mV)	-26.545.5 dB (5.3147.3 mV)
Omnidirectional	-42.061.0 dB (.8917.94 mV)	-41.022.0 dB (8.9179.4 mV)

*1 microbar = 74 dB SPL **1 Pascal = 94 dB SPL

Maximum Sound Pressure Level

(1 kHz at 1% Total Harmonic Distortion, 1 kΩ load)

Cardioid: 133.5117.0 dB
Supercardioid: 132.516.0 dB
Omnidirectional: 128.011.5 dB

Signal to Noise Ratio

(referenced at 94 dB SPL at 1 kHz, with 1 kΩ load)

Cardioid: 67.071.0 dB
Supercardioid: 72.68.0 dB
Omnidirectional: 72.5 dB

Equivalent Output Noise (A-weighted, with 1 kΩ load)

Cardioid: 27.0 dB SPL (23.0 dB SPL with mute switch)
Supercardioid: 26.0 dB SPL (22.0 dB SPL with mute switch)
Omnidirectional: 21.5 dB SPL (17.5 dB SPL with mute switch)
Omnidirectional: 76.5 dB

Equivalent Output Noise (A-weighted)

Cardioid: 23.0 dB SPL
Supercardioid: 22.0 dB SPL
Omnidirectional: 17.5 dB SPL

Dynamic Range at 1 kΩ Load

106.5 dB

Common Mode Rejection

45 dB minimum, 10 Hz to 100 kHz

Preamplifier Output Clipping Level

-6 dBV (0.5 V)

Low Frequency Rolloff

Factory default: 6 dB per octave below 25 Hz
Alternate setting: 12 dB per octave below 95 Hz

MX1BP Dimensions (Figure 5 on page 12)

84.3 mm H x 65.2 mm W x 25.7 mm D (3.32" x 2.57" x 1.01")

MX1BP Net Weight:

255 g (9 oz.) with attached cabling

Cable

One 3.7 m (12 ft) 2 conductor shielded output cable with 3-pin male XLR connector

Power Requirements

9 V alkaline battery (Duracell® MN1604 recommended); 8.4 V NiCd rechargeable battery or 9 V Ultralife® lithium battery optional; or, with phantom power, 10 V to 52 V dc.

Environmental Requirements

Operating Temperature Range: -18° C to 57° C (0° F to 135° F)
Relative Humidity: 0 to 95%

Battery Life (nominal)

600 continuous hours with 9 V alkaline battery

Battery Current (nominal)

0.8 mA

MX1BP Input Connector

Male 4-pin mini connector

MX1BP Input Configuration

Unbalanced

MX1BP Output Connector

Male 3-pin XLR

MX1BP Output Configuration

Transformer-Balanced

Certification

Meets European Union EMC Emissions and Immunity Requirements (EN 50081-1: 1992, EN 50082-1: 1992). Eligible to bear CE Marking. Conforms to European EMC Directive 89/336/EEC. Meets applicable tests and performance criteria in European Standard EN55103 (1996) parts 1 and 2, for residential (E1) and light industrial (E2) environments.

FURNISHED ACCESSORIES

Zipper Bag.....	26A14
Battery Powered Preamp	MX1BP

OPTIONAL ACCESSORIES

Inline Preamplifier Kit (phantom power only)	RK183PK
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REPLACEMENT PARTS

Omnidirectional Cartridge	R183B
Supercardioid Cartridge	R184B
Cardioid Cartridge	R185B
Output Cable (MX1BP Preamplifier)	95A2115
Belt Clip.....	53A8247B

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